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IEEE Antennas and Wireless Propagation Letters
Volume 13, 2014, Article number 6832429, Pages 1108-1111

Investigation of the unified rain attenuation prediction method with data from tropical climates (Article)

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Abstract

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The semi-empirical method recently proposed by Silva Mello and Pontes (SMP) for the prediction of rain attenuation in slant paths is investigated in this letter. The SMP method uses the simplified model of equivalent rain cell and the concept of an effective rain rate. However, substantial deviations were observed in SMP predictions when compared to the rain cell diameters derived from experimental data. The measured rain rates and attenuations were obtained from three tropical climates (Australia, and USM and IIUM both in Malaysia). The measured rain attenuation complementary cumulative distributions (CCDs) were also compared to SMP and the Rec. ITU-R P. 618-11. The test results show that the ITU-R model performs much better compared to SMP method in the three tropical climates. © 2002-2011 IEEE.

Author keywords

Correction factor effective rain height ITU-R 618-11 rain attenuation complementary cumulative distribution (CCD)
rain cell diameter Silva Mello and Pontes (SMP) method tropical climates

Indexed keywords

Engineering controlled terms: Electromagnetic wave attenuation Rain Tropics

Complementary
cumulative
distributions

Correction factors

ITU-R 618-11

Rain cells

Rain height

Silva Mello and
Pontes (SMP)
method

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